PATENT APPLICATION
Docket No. 9739-0070

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Craig Stolarczyk, et al	Conf. No.	3341
Serial No.	10/598,379	Examiner:	Amajad A. Abraham
Filed:	August 25, 2006	Art Unit:	1794
For:	RESTORING DAMAGED RAIL SEATS LOCATED ON CONCRETE RAIL TIES		

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION TRAVERSING CITED REFERENCES (37 C.F.R. 1.132)

The undersigned party hereby declares, as follows:

1. The person making this Declaration is Robert M. Loomis ("Loomis"), has worked for the Willamette Valley Company of Eugene, Oregon ("WVC"), the assignee of the above-referenced patent application, for about 17 years, and has worked as Technical Manager for WVC for about 5 years.

2. Loomis is a co-inventor in the above U.S. Patent Application No.10/598,379 and has been involved in the field of rail tie restoration for more than 11 years. Loomis has also been involved in the field of restoring damaged rail seats located on concrete rail ties for more than 6 years.

3. WVC is the assignee of the Application. WVC is the leader in restoring damaged rail ties.

4. Loomis' higher education background includes a B.S. in Chemistry from the University of Oregon and an M.S. in Chemistry from the University of New Mexico.

5. In the opinion of the undersigned, the method disclosed in US Pat. No. 7,138,437 to Giorgini et al. ("Giorgini") in view of US Pat. No. 4,295,259 to Rhodes et al. ("Rhodes") as evidenced by US Pat No. 5,173,222 to Young et al. ("Young") is totally distinguishable from the method of claims 1-24 in the above referenced patent application for the reasons set forth in the my Declarations dated June 11, 2009 and April 4, 2011, respectively, and for the reasons set forth below in paragraphs 6-22.

6. The Examiner has stated that Giorgini does not expressly teach : (1) restoring the damaged rail seat by curing the polymeric material under ambient temperature and pressure conditions; (2) wherein the polyurethane material is to be used to cure defects in rail seats and (3) wherein the polymeric material is substantially sag resistant assumedly during application, contouring and curing (sentence in Office Action is incomplete).

7. The Examiner has also stated a number of points with respect to Giorgini which do not comply with claims 1-24. Giorgini teaches that a polyurethane foam mixture is applied to the rail tie void (defect) in a wooden rail tie. We claim apply a self-supporting poly (urethane-urea) to a damaged rail seat located on a concrete rail tie. Our claimed concrete rail ties do not include the rail tie voids which are present in wooden rail ties such as those in Giorgini. The wooden rail ties of Giorgini do not have rail seats located thereon as are present in our claimed concrete rail ties. The void defect in Giorgini is within the confines of a wooden rail tie not on the top side or upper surface in the manner which a rail seat is located on a concrete rail tie as set forth in claims 1-24.

8. Giorgini teaches a polyurethane foam material comprising Part A which is a polyol component and part B which is an isocyanate component. Giorgini also states that a polyamine "gelling agent" can be added to Part A. This gelled polyurethane is filled into a void defect in a wooden rail tie which surrounds and supports it as defined below so that the non-self-supporting foam of Giorgini doesn't sag or runoff

(it would runoff if it weren't supported within the confines of the void defect). The supported polyurethane foam material is then cured to repair the rail tie. The cured polyurethane foam is self-supporting only after it is cured but not during the application and contouring processes.

9. Giorgini adds a polyamine as a "gelling agent" to its polyurethane foam to form urea linkages and produce a modified polyurethane material. Even though this modified polyurethane foam material of Giorgini has urea linkages it is not a poly (urethane-urea) material which can restore a rail seat on a concrete rail tie in the manner described in our claims. The foamed modified polyurethanes to which an amine gelling agent have been added as described in Giorgini cannot be employed to restore a damaged rail seat since they are not self-supporting, more particularly, they are not sag resistant and are not able to maintain their shape without substantial runoff from a concrete rail tie during the contouring and curing of the damaged rail seat. The Giorgini polymeric materials require being located within a cavity having walls that surround and support them during the curing process in order for the polyurethane foam to maintain its shape during curing. If Giorgini attempted to contour and cure its modified polyurethane in the manner claimed by applicants, the polymeric material would collapse and runoff.

10. The gelling agent's function in Giorgini is not to form the claimed poly (urethane-urea) material. Its purpose is to prevent environmental water at the substrate/material interface from reacting with the isocyanate component. In formulating terms, the gelling agent is described as a surface-acting agent to provide a particular property or a desired surface effect. At the surface/material interface the polyamine reacts quickly to form a 'skin' or cured surface and prevents further isocyanate-water interaction by decreasing the diffusion rate of water by density of the material. This surface-acting effect is very common in foam formulations and in particular at the atmospheric material surface where amines, both polyamine and amine catalysts, form skins or very dense surfaces over a foam. So, the mere use of polyamines to thicken the material surface and prevent the isocyanate component from further reacting with environmental moisture does not change materially change the composition of the polyurethane foam material of

Giorgini. Having "urea linkages" in a polyurethane composition does not mean that Giorgini has formed a poly (urea-urethane) material, much less a poly (urea-urethane) material as described in pending claims 1-24 of the subject patent application. As in the case of polyurethanes per se, the modified polyurethane of Giorgini are not self-supporting, are not sag resistant, and are not able to maintain their shape without substantial runoff from a concrete rail tie during the contouring and curing of a damaged rail seat.

11. On the other hand, we have incorporated polyamines in our formulation to actually create a polyurea network throughout the material, not just an outer skin. This in fact facilitates the formation of a poly (urethane-urea) material. This poly (urethane-urea) network prevents the material from sagging and flowing during contouring due to the presence of its three dimensional network structure. The consequence is that the claimed method is not directed to just a surface reaction as in Giorgini. Our method as claimed enhances the formation of a contoured damaged rail seat which has substantially the original dimension as an undamaged rail seat. In this way, the subject polyurethane-urea material can be dispensed on a surface without running off. Contrarily, the Giorgini material is not sag resistant, will not maintain its shape, but instead will simply roll off the surface while forming a surface skin as described above due to the presence of environmental water. Giorgini can only function within a confined space or cavity which retains and supports it until it can form a fully cured polyurethane rail hole plug because it does not have sufficient structural integrity as a stand-alone entitiy during the curing process. In Giorgini, the uncured foam polyurethane material is not sag resistant because it doesn't have to be sag resistant. The spike hole or defects described in Giorgini act a mold during the formation of the foam polyurethane. Giorgini is not self-supporting and the polyurethane foam is not capable of being contoured to form a contoured damaged rail seat having substantially the original dimensions of an undamaged rail seat because it is not sag resistant.

12. The claimed poly(urethane-urea) material is not a polyurethane foam composition such as described above by Giorgini. Polyurethanes, and particularly foamable polyurethanes, cannot be contoured and cured in an unsupported manner as

described in claims 1-24. In this way, our poly (urethane-urea) material is employed to restore damaged rail seats on concrete rail ties to the original dimensions of an undamaged rail seat in the manner claimed herein. The Giorgini polyurethane foam materials are not sag resistant and they cannot maintain their shape without substantial runoff as per our claimed poly(urethane-urea) material which do not substantially runoff from a concrete rail tie during the contouring and curing process steps.

13. The Examiner asserts that a sag resistant polymeric repaired article is produced by Giorgini which can withstand dynamic operating conditions, compressive loading, maintaining rail gauge of a railcar. The sag resistance property is only present in the Giorgini post cured repaired article not during application or curing (Giorgini doesn't have a contouring step because it isn't required because of the presence of cavities to support the polyurethane material as described below). Furthermore, the sag resistance post cured repaired article requires strength enhancers in order for it to withstand dynamic operating conditions, compressive loading, and maintain rail gauge of a railcar. We do not use strength enhancers for restoring a damaged rail seat located on a concrete rail tie.

14. Giorgini states that foam polyurethane materials containing strength enhancers can repair defects which create "cavities" in structural members such as wooden rail ties, doors, windows, furniture, and cabinets, and in cavities formed within concrete structures. These cavities are void areas in structural members which can be filled with the polyurethane foam material of Giorgini and which must have the ability to surround and support the polyurethane foam material during the curing process. Contouring of a polymeric material does not occur in the repair process of Giorgini because it is not necessary to do so. The Giorgini polyurethane foam material is not self-supporting. Instead, the polyurethane material of Giorgini must be surrounded and supported by the walls of the cavity into which it have been introduced during the curing process. Sag resistance and runoff are not a problem in the repair operation of Giorgini because these situations do not arise when a foam polymeric material is put into an enclosure which supports it during the entire

curing step. A polymeric foam material in general, and a polyurethane foam per se, is not sag resistant and will runoff a surface which does not surround and support it during curing. Giorgini does not relate to restoring a damaged rail seat on the upper surface of a concrete rail tie, as described above, which is conducted without a cavity which can surround and support a non-self supporting polyurethane foam material.

15. Conventional rail seats used on concrete rail ties are made of a polyurethane material which is not the poly(urethane-urea) material of claims 1-24. This conventional polyurethane material is not sag resistant and, if applied to a damaged rail seat, will runoff during any one of the application, contouring and curing steps of claims 1-24. The teachings of Giorgini are also not applicable to the repair of rail seats located on concrete rail because, as stated above, Giorgini relates to wooden rail ties which do not include polyurethane rail seats. Girogini repairs spike hole defects using non-self-supporting foam polyurethane introduced into a cavity which supports the Giorgini foam during curing. The Giorgini process does not contemplate repairing rail seats on concrete rail ties.

16. Rhodes teaches a method of repairing spike holes in a wooden railway tie which is similar to Giorgini. However, both Rhodes and Giorgini are both totally different than the method of restoring a damaged rail tie which is set forth in claims 1-24. As with Giorgini, Rhodes adds a polyurethane foam to a spike hole in a wooden rail tie which acts as a mold for the formation of the cured polymeric material and is different than claim 1-24 for the reasons set forth above. The repaired articles formed from the processes disclosed in Giorgini and Rhodes do not have the claimed sag resistance nor the ability to maintain its shape without substantial run-off during application and curing and is different than claim 1-24 for the reasons set forth above. Contouring of the polyurethane material of Rhodes is not taught or suggest because it is not contemplated in order to accomplish the purposes stated in Rhodes and is different than claim 1-24 for the reasons set forth above. This why the polyurethane material of Rhodes can only function within a confined space or cavity which retains and supports it until it forms a fully cured polyurethane rail hole plug. Rhodes does not

have sufficient structural integrity as a stand-alone entity during the application or curing process.

17. WVC has experimentally attempted to employ polyurethanes per se to restore damaged rail seats on concrete rail ties to the original dimensions of the undamaged rail seat in the manner claimed herein. WVC has concluded that polyurethanes are not sag resistant and that they do not maintain their shape without substantial runoff from the concrete rail tie during said contouring and curing of that polymeric material. Therefore, polyurethanes, and particularly foamable polyurethanes, as set forth in Giorgini and Rhodes cannot be employed to restore a damaged rail seat since they are not sag resistant and are not able to maintain their shape without substantial runoff from the concrete rail tie during the contouring and curing of the damaged rail seat.

18. Young employs a method of curing defects in rail seats which is totally different than the method of claim 1-24. Young involves the use of epoxy materials which cure fairly slowly. Young's requires using equipment such as clamps for confining the epoxy material during curing, and applies heat and pressure to the confined epoxy material. Young is similar to Giorgini and Rhodes in that it relates to the application and curing of a non-self-supporting polymeric material which must be conducted in a confined space. Furthermore, Rhodes requires the use of heat and pressure to cure the epoxy material. However, the method of claims 1-24 employs a poly(urethane-urea) material, not a foam polyurethane or epoxy, which is self-supporting and does not require confining equipment or a confining cavity (see discussion above re Giorgini and Rhodes), nor does it need to employ heat or pressure. As we previously stated, even when the epoxy is applied in a relatively thin layer, the cure time can take 12 to 36 hours at typical ambient temperatures. This is completely unacceptable from a train operator's point of view. If the trains are running even relatively slowly over the freshly repaired rail seats, and if the epoxy is still in a plastic state, it will run-off. This will disrupt the true level of the rail seat, causing cavities to form in the rail seat material. This also results in improper bonding to the abrasion plate. All of these factors will lead to subsequent failure of the rail seat. Our

claims define technology which is a substantial improvement over Young for the following reasons: 1) there is no confinement equipment which is required; 2) there is no pressure which is required; 3) there is no heat which is required; and 4) the claimed poly(urethane-urea) material meets the requirements which are not met by epoxy materials such as self-supporting and capable being contoured and cured without being confined, durability, strength, adhesion, gel time, compressive loading, elongation, speed, ease of application, etc.

19. Rail seat abrasion is a major problem with respect to concrete rail ties, not wooden rail ties. It is a major safety and maintenance problem for railroad companies who employ concrete rail ties. Our method successfully commercially overcomes the rail seat abrasion problem without the problems associated with the use of epoxies. Our polymeric material represents a significant improvement over epoxies. Young relates to the use of epoxy to repair concrete rail seats. For example, our poly(urethane urea) material cures more quickly, does not require the use of rail holding plates, is extremely tough and is not brittle. A further discussion of the problems which result from the use of epoxies for repairing rail seat abrasion can be found in the above-referenced patent application from page 2, line 18 to page 3, line 6.

20. The Examiner states that Markusch l, Markusch 2, and Markusch 3 ("Markusch") all teach that when repairing defects in an article (concrete or plastic) a non-sagging (sag resistant) material (polyurethane based) is used which can be cured at ambient conditions. This statement is not correct. Markusch is an expandable material that is non-shrinking, not a substantially sag resistant solid poly (urethane-urea) material which can be employed for restoring a damaged rail seat located on a concrete rail tie. The Markusch material is expandable and non-shrinking within a confined area not a non-expanded, unsupported, unconfined solid material which contoured and cured in situ according to claims 1-24. The polyurethane material of Markusch is really a non-shrinking composition which employs water as an ingredient. The Markusch material expands and fills a cavity (as does Giorgini and Rhodes) and, because it including a non-shrinking agent (water), it will fill the cavity into which it is introduced and will not

contract within that cavity. The Markusch material is an expanded polyurethane which will not support and maintain the gauge of a rail assembly under dynamic operating conditions.

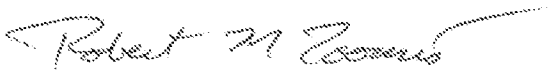
21. The Examiner states that Barth teaches that when repairing defects in an article (concrete or plastic) a non-sagging (sag resistant) material (polyurethane based) is used which can be cured at ambient conditions. This statement is not correct. Barth is an expandable frothable cellular polyurethane material that is non-shrinking, not a substantially sag resistant solid poly (urethane-urea) material which can be employed for restoring a damaged rail seat located on a concrete rail tie. The Barth material is expandable and non-shrinking within a confined area not a non-expanded, unsupported, unconfined solid material which contoured and cured in situ according to claims 1-24. The polyurethane material of Barth is really a non-shrinking composition which employs inert gas as an ingredient. The Barth material expands and fills a cavity (as does Giorgini and Rhodes) and, because it including a non-shrinking agent (inert gas), it will fill the cavity into which it is introduced and will not contract within that cavity. The Barth material is an expanded cellular polyurethane, not a solid rail seat, which will not support and maintain the gauge of a rail assembly under dynamic operating conditions.

22. The Examiner states that Giorgini does not expressly teach a polyol which is a hydroxyl capped polyol and the amine is a polyether capped amine, but Giorgini does teach a polyurethane composition which can include extenders. The Examiner defines chain extenders as reactive low molecular weight di-functional compounds such as hydroxyl amines, glycols or diamines which are used to influence the end properties of polyurethane. The use of chain extenders will not create the sag resistant properties in the cure time of our technology as set forth in claims 1-24. Our product doesn't use chain extenders to create its excellent sag resistant characteristics.

I hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the

like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated this 11 day of November, 2011.



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